# The Concept of Corporate Digital Responsibility (CDR)

## In the Light of a Philosophical Analysis of the Concept of Responsibility in the Age of AI

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### *1. Introduction*

In the following, I bring forward some key insights from my recent book "Zukunftsethik der Künstlichen Intelligenz: Perspektiven und Strategien für ein verantwortungsvolles und wirtschaftliches Handeln von morgen" (cf. Hoffmann 2025) and apply them to the discourse on Corporate Digital Responsibility (CDR). For the latter, I particularly refer to a paper by two researchers in business administration at a German university of applied science, Knopf and Pick (2023), since the academic discourse seems to be coined by persons that are closer to, on the one hand, business and social sciences than to the humanities and philosophy and to, on the other hand, the business practice than the ivory tower.

Using this example, the present paper pursues the goal of outlining some flaws in the discourse on CDR which result from a lack of rigorous philosophical analysis. This finding will then allow us to derive lessons on how to improve the future discourse on CDR.

## 2. *Setting the Scene: Approach by Knopf and Pick*

The authors kick-off their investigation by observing that

> [t]he digital transformation of the economy and society is fundamentally changing the possible value creation processes of companies. These changes increasingly involve the processing of personal data into information and knowledge that can be used to create individualised user experiences or gain insights from aggregated data. Customer relationships and the interconnectedness of customers are similarly changing as a result of this digital transformation. As customers become more demanding and involved, voluntary activities that go beyond compliance and regulation are becoming increasingly important. At the same time, companies are increasingly recognising the potential of privacy-friendly goods and services. They are using the heterogeneity of their offerings to develop unique selling propositions that focus on fulfilling their digital responsibilities (e.g., Apple, Samsung). In this way, digital responsibility fosters innovation in goods, services and digital markets. The voluntary responsibility of companies in dealing with digital technologies and creating value from data is discussed under the term "corporate digital responsibility" (CDR) (Knopf/Pick 2023: 469).

Knopf and Pick acknowledge that this young field of research roots in the study of Corporate Social Responsibility (CSR), which has been around for decades, yet they propose to regard CDR as a discipline in its own right. The authors attempt to back up the latter claim by conducting a systematic literature synthesis. Their paper thereby puts emphasis on

> definitional approaches, approaches to describing the entrepreneurial motivation for CDR activities and their consequences for corporations, their business relationships and society (ibid.).

The core element of their paper are the following two tables where the first presents 18 definitions of the term "CDR" and the second evaluates them along ten criteria that the authors simply stipulate.

| Authors | Definitions |
|---|---|
| **BMUV (2021)** | "CDR is a voluntary corporate activity, particulary considering the consumers' persepctive, which strives to go beyonf what is required by law to shape the digital world for the advancement of society" |
| **Carl et al. (2022)** | "CDR activities exceed the legally binding (national) minimum requirements and rather describes the voluntary accaptence of additional responsibilities" |
| **Dörr et al. (2021)** | "A set of practices and behaviours that help an organisation to use data and digital technology in ways that are preceived as socially, economically and envirnomentally responsible" |
| **Driesens et al. (2017)** | "CDR is a voluntary commitment. It starts with the need to conform to legal requirements and standards – for handling customer data, confidential, intellectual property and so on – but it also extends to wider ethical considerations and the fundamental values that an organization operates by" |
| **Elliot et al. (2021)** | "A potential collaborative mechanism to navigte such complexity, proposing guidance frameworks towards responsible corporate digital action in preserving societal interets"; "A voluntary commitment by organizations fullfilling the corporate rationalizers' role in representing community interests to inform "good" digital corporate actions and digital sustainability (i. e. data and algorithma) via collaborative guidance on adressing social, economic and ecological impacts on digital society" |
| **Herden et al. (2021)** | "Is an extension of a firm's responsibilites which takes into account the ethical opportunites and challenges of digitalization" |
| **Huber (2022) (translated from german)** | "Framework for action and decision-making that shows how AI risks and opportunities are to be balanced in order to meet social responsibility of companies with regard to digital issues"; "Perception of a voluntary, beyond the legally binding, corporate responsibility for the consequences of the development, disseminatio or use of digital technologies on society as a whole, but also on the concrete individual person" |
| **Kenning (2020) (translated from german)** | "Extent […] to which companies and organizations use digital technologies to achieve societal goals in the areas ecology, economy and social issues, as well as the extend to which companies and organizations take into account aspects of data protection and data security as well as use data and digital technologies responisble" |
| **Leonard (2016)** | "Expanding the remit of CSR to address the impact of the digital tools and environments that business operate in" |
| **Lobschat et al. (2021)** | "The set of shared values and norms guiding an organization's operations with respect to the creation and operation of digital technology and data" |
| **Mihale-Wilson et al. (2021, 2022)** | "CDR seeks to ensure an ethical and responsible development, deplyoment and use of digital technologies and data"; "Part of the "obligations"that companies have toward society" |
| **Schymura (2018) (translated from german)** | "Corporate Digital Responsibility is an understanding of corporate responsibility in and for a digital society. It involves a regulated and a voluntary level: on the one hand, the observance of relevant laws or derectives, on the other hand, the exercise of a voluntary responsibility in shaping the digital society" |
| **Suchacka (2019)** | "CDR means the awareness of duties binding the organisations active in field of technological development and using technologies to provide services" |
| **Thelisson et al. (20219)** | "[…] means a kind of digital corporate social responsibility" |
| **Trittin-Ulbrich/Böckel (2022)** | "CDR emphasizes the voluntary, self-regulatory character of coporate commitment to responsible digital innovation" |
| **Van der Merwe/Al Achkar (2022)** | "As the set of practices, policies and governance structures of coparations as they relate to the digital transformation" |
| **Weißemberger/Marrocco (2022)** | "CDR is a voluntary corporate orientation to ensure a responsible use of digital technologies" |
| **Wirtz et al. (2023)** | "We define CDR in the context of serivice as the principle underpinning a service firm's ethical, fair and protective use of data technology when engaging with customers within their digital service ecosystem" |

FIGURE 1: DEFINITIONS OF CORPORATE DIGITAL RESPONSIBILITY (SOURCE: KNOPF/PICK 2023: 472)

| Categories | Scope of Responsibilitx | | | | Scope of Activites | | | Scope of Beneficaires | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eco-nomic | Legal | Ethi-cal | Philan-thropic | Envi-ron-mental | Social | Govern -ance | Cor-porate | Corpo-rate Relations | So-ciety |
| Sum | 2 | 11 | 14 | 5 | 4 | 8 | 10 | 3 | 3 | 6 |
| BMUV (2021) | | X | X | X | | X | | X | X | X |
| Carl et al. (2022) | | X | X | | | | | | | |
| Dörr et al. (2021) | X | | X | | X | X | X | X | | |
| Driesens et al (2017) | | X | X | X | | X | | | | X |
| Elliot et al. (2021) | X | X | X | X | X | X | X | | | X |
| Herden et al. (2021) | | | X | | | | | | | |
| Huber (2022) | | X | X | | | X | X | X | X | X |
| Kenning (2020) | | X | | | X | X | X | | | |
| Leonard (2016) | | | | | X | | X | | | |
| Lobschat et al. (2021) | | | X | | | | X | | | |
| Mihale-Wilson et al. (2021, 2022) | | X | X | | | X | X | | | X |
| Schymura (2018) | | X | X | X | | | | | | X |
| Thelisson et al. (20219) | | | | | | X | | | | |
| Trittin-Ulbrich/Böckel (2022) | | | X | X | | | | | | |
| Van der Merwe/Al Achkar (2022) | | X | | | | | X | | | |
| Weißemberger/ Marrocco (2022) | | | X | | | | | | | |
| Wirtz et al. (2023) | | X | X | | | | X | | X | |

FIGURE 2: CDR DEFINITIONS BY SCOPE OF RESPONSIBILITY, ACTIVITIES AND BENEFICIARIES (SOURCE: KNOPF/PICK 2023: 473)

Based on that, Knopf and Pick (2023) identify the research gap of a lack of consensus on a unified CDR definition, and assert that a better understanding of CDR would be achieved by a unification of the different proposals (cf. ibid.: 474), which however looks premature in the light of the subsequent key findings from a clear philosophical exploration of the concept of responsibility in the context of AI, entrepreneurship and effective ethics (cf. Hoffmann 2025).

## *3. Key Insights for Clarification*

According to Hoffmann (2025), the concept of moral responsibility, which in turn is crucial in the debate on technology ethics, can be systematized as follows:

| | **(1)** | **(2)** | **(3)** |
|---|---|---|---|
| (A) WHO is responsible (Agent) | Individual | Corporation | Society |
| (B) WHAT | Action | Omission | Product |
| (C) WHOM to (patient) | Individual | Collective | Thing |
| (D) WHEREFORE | Moral rules | Social values | State laws |
| (E) WHAT OF | Conscience | Judgment of others | Court |
| (F) WHEN | After: prospective | Momentarily | Before: retrospective |
| (G) HOW | Active | Virtual | Passive |
| (H) HOW good or bad | Positive | Neutral | Negative |
| (I) WHAT scope of the consequences of the action (in terms of location / time) | Unremarkable | Cumulative | Irreversible |

FIGURE 3: MORPHOLOGICAL MATRIX OF RESPONSIBILITY TYPES (PARTIAL) (SOURCE: ROPOHL 1994: 112).

Referring to these questions, a suitable systematization of the concept of responsibility can be proposed as a morphological matrix of responsibility types in Figure 3, whereby (A) is aimed at the acting subject, (C) represents the opposite side, i.e. the person to whom the action happens, (D) represents a central element of the concept of responsibility, since otherwise it would be unclear why one operates with a concept of responsibility at all and (E), closely linked to (D), stands for the instance vis-à-vis which one is held responsible; (B) is implied because responsibility

is based on acting subjects; (F) corresponds with the time dimension and (H) with the evaluation dimension of the consequences of actions and (G) was introduced by Ropohl (1994) as a new additional differentiation option. Dimension (I), or the last-mentioned question in Figure 3, was first recorded in Hoffmann (2025), as AI is essentially interwoven with its object of investigation. We inhabit an AI world and witness an era of AI, and AI makes it necessary to include new ethical aspects.

With the help of this matrix, individual types of responsibility relevant to Hoffmann's (2025) study can be outlined and specified. Concepts of responsibility, such as those underlying the idea of AI valuation and responsible tech entrepreneurship, can be reconstructed along this scheme (Figure 3) and the following lines:

| | |
|---|---|
| (A) Agent(s): | (A1): AI developer (researcher, product manager, …) |
| | (A1): AI user |
| | (A1): AI system |
| | (A2): AI company / companies |
| | (A3): Modern societies in which AI occurs |
| (B) Responsible for (B1-3): | Ostensibly actions (B1) that lead to AI systems or AI products, for example, but also the AI products themselves Or omitted actions that would be desirable |
| (C) Patient(s): | (C2): AI (strikingly often) affects many, not individuals |
| (D) Evaluation system (D1-2): | Some concepts of responsibility are shaped by value-ethical approaches, others by moral rules and norms; however, since the ethicists typically deal with moral responsibility, laws are ruled out |
| (E) Instance | (E2): Primarily the judgment of others |
| (F) Time dimension | (F1): In this respect, building on the findings from Hoffmann (2025), a plea is made for forward-looking responsibility |

| | |
|---|---|
| (G) Involved | (G1): Analogous to (F), although AI specifics and the dynamic complexity of our social systems allow for the whole variety, i.e. also (G2) and (G3) |
| (H) Consequences of action | (H1 and H3): Technology assessment (especially in the spirit of Jonas, 1979/1984) is classically aimed at threats and thus H3, whereas Hoffmann (2025) with its focus on entrepreneurship and start-ups is oriented towards innovations and opportunities and thus H1 |
| (I) Scope | (I2–3): AI technology changes the consequences of actions in such a way that irreversibility and cumulativeness occur |

Hoffmann (2025) then zooms into each row or category and scrutinizes to what extent responsibility can and should be born and what restrictions are to be singled out. Thereby, he pays special attention to the limits of responsibility concepts. In terms of the latter, examples abound to motivate how AI poses problems to operate with the concept of responsibility. The phenomenon that perhaps stands out most is the so-called "responsibility gap" which results from the use of AI, and which can be illustrated as follows:

For example, if I (a human person) compete against the South Korean professional Lee Sedol in the board game "Go" and lose, then I am responsible for this failure (responsibility with a negative connotation, H3) because I thought about my moves and executed them to the best of my knowledge and free from constraints. However, who or what should be praised for the success (responsibility with a positive connotation, H1) of the AI AlphaGo in 2016, which "beat" Lee Sedol as a computer program? The developers and programmers at DeepMind? The entire company, right down to the janitor? The person who moved the board pieces on behalf of AlphaGo? AlphaGo itself? We must first clarify these questions before we as a society can establish clear and transparent rules for the responsible use of AI. Examples such as this one pose the question of responsibility forcefully and puzzle over the answers. Indeed, Matthias (2004 and many others since, e.g. Kiener 2022) argues that there is a growing responsibility gap: The more complex computing and AI technologies become, and the less humans can directly control or intervene in the behavior of these technologies, the less we can reasonably hold humans responsible for these technologies or their use, respectively. Despite the ongoing philosophical debates on this topic, most analyses of moral responsibility exhibit at least the following three conditions:

1. There should be a causal link between the agent and the outcome of her actions. The moral subject is usually only held responsible if they had at least some control over the outcome of the events. How close the causal chains must be is a point of contention in the expert debate and a position is taken in Hoffmann (2025) following Santoni and van den Hoven (2018).
2. The agent must know and be able to weigh up the possible consequences of their actions. We tend to absolve someone of blame (e.g. young children) if she or he could not have known that her or his actions would lead to a harmful event.
3. The agent must be able to freely decide to act in a certain way. Responsibility is the reverse side of freedom, as it were. In other words, it makes no sense to hold someone responsible for suffering or, conversely, positive benefits, i.e. (un)desired consequences of action, if her or his actions were completely determined by external forces. Or to put it in a crisp, thanks to Kant familiar formula that can be applied here: Should implies can.

A closer look at these three requirements or conditions for responsibility concepts shows that, on the one hand, the dynamic complexity of our current socio-economic systems (cf. Forrester 1961; Ulrich/Probst 1990) and, on the other hand, computer technology or, more specifically, AI, which are arguably a concrete manifestation of dynamic complexity, can call into question the fulfillment of each of these conditions. Behind the scenes, what we observe in our dynamically complex and AI-interwoven world is as follows:

Ad 1: As seen in the case study above, AI can obscure the causal relationships between a person's actions and the possible consequences of those actions. In particular, the involvement of a large number of actors in the development and use of AI technologies, sometimes with a large physical and/or temporal distance between the respective actions and the associated consequences of the actions, leads to the so-called problem of "many hands" (cf. Nissenbaum 1994; Doorn/van de Poel 2012): As traced in the case study above with AlphaGo, it is difficult to determine who is responsible for what when several people have contributed to the outcome of the events. Several AI engineers and their managers were involved in the success of AlphaGo; however, from a purely causal perspective, the person who mechanically moved the game pieces in the name of AlphaGo was also involved.

Ad 2: According to the second condition, it would be inappropriate to hold someone responsible for something if he or she could not have known at the time of the action that his or her actions could lead to harm or suffering. Although AI technologies can increase the predictability

and calculability of the consequences of actions – think of AI-supported climate models, for example – the reverse is also true: AI often makes it more difficult to understand the outcomes of decisions; "often" in the sense that powerful deep learning tools dominate the AI world these days, which in turn represent black boxes to a particular extent – although the feature of the black box or this problem of opacity is much greater and more fundamental. The following example of the difficulty of assessing the consequences of actions by AI confirms this finding: AlphaGo and its successor AlphaGo Zero have reached a world championship level in the game of Go, in that the AI programs have chosen moves that neither their developers nor experts such as Lee Sedol could predict (cf. Silver/Hassabis 2016; Silver et al. 2017; Tegmark, 2018: 88). When analyzing AlphaGo's game, the focus was not only on its victory over the South Korean professional, but also on supposed "AI creativity".

Ad 3: Freedom of action is probably not only the most important condition for the attribution of moral responsibility, but it is also arguably one of the most controversial (cf. Talbert 2019). The community of moral subjects tends to absolve people of moral blame when they had no choice but to act as they did. This is because the importance of freedom of action, which is usually associated with a gradual concept (e.g. an adult is, ceteris paribus, freer to act than a child) for the attribution of moral responsibility is based on the fact that free, self-determined action expresses the authentic motivation, motives and intentions of the moral subject.

Like other technologies, AI adds an additional layer of complexity when it comes to determining whether someone is capable of acting freely, as AI affects the decisions that decision-makers make and how they make them. One of the most important AI application areas is the automation and control of decision-making processes. A seminal example of how actors become less free through the use of AI is Amazon's now defunct AI recruitment tool (cf. Chang 2023).[1]

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[1] Amazon has shut down its experimental recruitment tool based on AI after it was found to discriminate against women. The company had developed the AI to scour the internet and recognize potentially suitable applicants and rate them with one to five stars. However, the algorithm learned to systematically devalue the CVs of women for technical professions such as software development. Machine learning algorithms like the one used by Amazon are trained to recognize patterns in large data sets in order to predict outcomes. In Amazon's case, the algorithm used all the CVs submitted to the company over a ten-year period to learn how to recognize the best applicants. Given the low proportion of women in the company, as is the case in most technology companies, the algorithm quickly recognized the male dominance and considered it a success factor, which in philosophy is recognized as a fallacy where

To summarize: All three (necessary) conditions for assuming responsibility are called into question by AI. What results from this realization? Is it still possible to operate meaningfully with "responsibility" in the age of AI? Are there gaps in responsibility here and there? What solution strategies are available?

There are solution strategies for satisfactorily answering the following two questions: Who exactly is to be held responsible if the AI machine makes/will make a mistake? Or who takes the credit when the machine successfully solves/will solve a problem? Five such strategies are briefly named here and are explained and discussed by Hoffmann (2025), before the fifth strategy is highlighted as the most promising.

- Strategy 1: AI bears responsibility (not compelling according to Hoffmann 2025)
- Strategy 2: Responsibility gaps do not need to be closed at all (does not correspond to our common practice)
- Strategy 3: Moral actors voluntarily assume responsibility (possible and desirable, but lacks incentivization)
- Strategy 4: Semantic differentiation in the attribution of responsibility (interesting, yet limited in terms of impact according to Hoffmann 2025)
- Strategy 5: System view by focusing on human-machine teams (most promising according to Hoffmann 2025).

In light of these and more findings, Hoffmann (2025) proposes the subsequent responsibility matrix when applied to nowadays AI:

causality is confused with correlation. Because the AI was now using the results of its own predictions to improve its accuracy, despite Amazon's leadership in AI technology, it got stuck in the trap of sexism towards female applicants, meaning the AI inherited undesirable human traits such as bias and discrimination that have been a problem in recruitment for years. The human decision-makers in Amazon's HR department thus became less free in their recruiting decisions while using their AI tool, as many actually suitable female candidates were wrongly and unthinkingly not looked at and the HR professionals thus unknowingly missed their goal to attract the best talent for Amazon.

| | |
|---|---|
| (A) WHO is responsible (Agent) | Lexical order, which is specified in Hoffmann (2025):<br>▪ AI companies (as sufficiently large, stable systems appropriate to absorb the complexity of AI and companies are concrete actors)<br>▪ AI developers (concrete actors who have a lot of influence on AI)<br>▪ AI users (specific, but disadvantaged actors in AI markets, structural information asymmetry)<br>▪ Civil society (no specific actor, whereas responsibility requires a clear address for attribution)<br>▪ Moderate regulator ("the last resort") |
| (B) WHAT | Focus on actions |
| (C) WHOM to (patient) | Collective |
| (D) WHEREFORE | "Plurality of orientation systems" |
| (E) WHAT OF | The judgment of others |
| (F) WHEN | Primary: prospective<br>Secondary: retrospective |
| (G) HOW | Primary: active<br>Secondary: virtual and passive |
| (H) HOW good or bad | Primary: positive<br>Secondary: negative |
| (I) WHAT scope of the consequences of the action (in terms of location / time) | Cumulative and irreversible |

FIGURE 4: MORPHOLOGICAL MATRIX OF RESPONSIBILITY TYPES REVISITED (SOURCE: HOFFMANN 2025 [FORTHCOMING])

## *4. Limitations of the Analysis and Implications for the Future Discourse on CDR*

When we now bring together the results from sections 2 and 3 of the present chapter, it has to be noted first that there is a certain discrepancy. While Knopf and Pick (2023) as well as the term CDR refer to digitization, Hoffmann (2025 [forthcoming]) is investigating AI which is not the same. My understanding is that AI is a form of automation which presupposes digitization. (To arrive at a deeper understanding of AI which also considers what the I in AI stands for, the reader is referred to Hoffmann 2022) Moreover, and in particular, I would hold that the findings by

Hoffmann (2025 [forthcoming]) do not only apply to AI, but also to digitization. With this in mind, we can assess and comment on the paper by Knopf and Pick (2023), and potentially the wider debate on CDR as follows:

- Knopf and Pick (2023) do not problematize the concept of responsibility at all, at least not in an analytic philosophical fashion.
- If one was willing to defend their analysis on the grounds that the authors differentiate between an economic, legal, ethical and philanthropic dimension of responsibility (see Figure 2), then a philosopher must respond that this hardly does justice to a proper philosophical or conceptual analysis since the problem of what is meant is simply moved by one level.
- The veritable pitfalls that operating with a responsibility notion pose in connection with AI or digitization for that matter are disregarded.
- Their readers are not made aware of how the concept of responsibility works, i.e., the crucial elements of the concept of responsibility as outlined, for example, in Table 3, are not taken into account. This provokes misunderstandings.
- Knopf and Pick (2023) scratch the surface at most when they distinguish between a legal use or context of responsibility and a use of the term of responsibility that goes beyond that. To philosophers such as Hoffmann (2025 [forthcoming]), this point is more regarded as a starting point of a study than to be taken as a genuine result.
- None of the 18 definitions the authors reviewed and assembled in Table 1 are inspired by philosophy, its rigor and objective of conceptual clarity. For this reason, it is doubtful to what extent these definitions are helpful at all; well-exemplified by the proposal no. 14 in the table: "[CDR] means a kind of digital [merely spelling out the "d" in "CDR"] CSR". In IT, this would well be labelled as a case of garbage-in-and-garbage-out.
- The issue as they claim is "not" a lack of consensus on a unified CDR definition or a better understanding of CDR through a unification of the different proposals from Table 1; in fact, this might do more harm than good to build master definitions and consensus on top of little conceptual understanding. The way forward ought to take the complexity of the notion of responsibility, including its challenges seriously and respond to them first.

The reader is invited to learn more about how AI ethics should not be conceived of as a regulatory and interventionist technology ethics, but rather as innovation-friendly business ethics that

strengthens entrepreneurship. We, therefore, point the interested reader to the full book "Zukunftsethik der Künstlichen Intelligenz: Perspektiven und Strategien für ein verantwortungsvolles und wirtschaftliches Handeln von morgen" (ibid.)

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